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1600

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/476,485A

DATE: 09/19/2002

TIME: 16:25:24

Input Set : A:\108236-119.ST25.txt

Output Set: N:\CRF4\09192002\I476485A.raw

4 <110> APPLICANT: Colucci, M. Gabriella  
 5 Chrispeels, Maarten J.  
 6 Moore, Jeffrey G.  
 8 <120> TITLE OF INVENTION: Progenitor Cell Preservation Factors and Methods for  
 9 and Products of Their Use  
 11 <130> FILE REFERENCE: 108236.119  
 13 <140> CURRENT APPLICATION NUMBER: US 09/476,485A  
 C--> 14 <141> CURRENT FILING DATE: 2000-12-22  
 16 <150> PRIOR APPLICATION NUMBER: US 08/881,189  
 17 <151> PRIOR FILING DATE: 1997-06-24  
 19 <160> NUMBER OF SEQ ID NOS: 57  
 21 <170> SOFTWARE: PatentIn version 3.0  
 23 <210> SEQ ID NO: 1  
 24 <211> LENGTH: 939  
 25 <212> TYPE: DNA  
 26 <213> ORGANISM: Artificial Sequence  
 28 <220> FEATURE:  
 29 <223> OTHER INFORMATION: D1-FRIL.  
 32 <400> SEQUENCE: 1  
 33 gcacagtcac tgtcatttag tttcaccaag tttgatccta accaagagga tcttatcttc 60  
 35 caagggtcatg ccacttctac aaacaatgtc ttacaagtca ccaagttaga cagtgcagga 120  
 37 aaccctgtga gttctagtgc gggaagagtg ttatatctcg caccattgcg cctttgggaa 180  
 39 gactctgctg tattgacaag ctttgacacc attatcaact ttgaaatctc aacaccttac 240  
 41 acttctcgta tagctgatgg cttggccttc ttcattgcac cacctgactc tgtcatcagt 300  
 43 tatcatgggtg gttttcttgg actctttccc aacgcaaaac ctctcaacaa ctcttcacc 360  
 45 tctgaaaacc aaaccaccac taaggctgca tcaagcaacg ttgttgctgt tgaatttgac 420  
 47 acctatctta atcccgaata tgggtgatcca aactacatac acatcggaat tgacgtcaac 480  
 49 tctattagat ccaaggtaac tgctaagtgg gactggcaaa atgggaaaat agccactgca 540  
 51 cacattagct ataactctgt ctctaaaaga ctatctgtta ctagttatta tgctgggagt 600  
 53 aaacctgcga ctctctccta tgatattgag ttacatacag tgcttcctga atgggtcaga 660  
 55 gtagggttat ctgcttcaac tggacaagat aaagaaagaa ataccgttca ctcatggtct 720  
 57 ttcacttcaa gcttgtggac caatgtggcg aagaaggaga atgaaaacaa gtatattaca 780  
 59 agaggcgctt tgtgatgata tatgtgtatc aatgattttc tatgttataa gcatgtaatg 840  
 61 tgcgatgagt caataatcac aagtacagtg tagtacttgt atgttggttg tgtaagagtc 900  
 63 agtttgcttt taataataac aagtgcagtt agtacttgt 939  
 67 <210> SEQ ID NO: 2  
 68 <211> LENGTH: 264  
 69 <212> TYPE: PRT  
 70 <213> ORGANISM: Artificial Sequence  
 72 <220> FEATURE:  
 73 <223> OTHER INFORMATION: D1-FRIL.  
 76 <400> SEQUENCE: 2  
 78 Ala Gly Ser Leu Ser Phe Ser Phe Thr Lys Phe Asp Pro Asn Gln Glu

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79 1           5           10           15
81 Asp Leu Ile Phe Gln Gly His Ala Thr Ser Thr Asn Asn Val Leu Gln
82           20           25           30
84 Val Thr Lys Leu Asp Ser Ala Gly Asn Pro Val Ser Ser Ala Gly
85           35           40           45
87 Arg Val Leu Tyr Ser Ala Pro Leu Arg Leu Trp Glu Asp Ser Ala Val
88           50           55           60
90 Leu Thr Ser Phe Asp Thr Ile Ile Asn Phe Glu Ile Ser Thr Pro Tyr
91 65           70           75           80
93 Thr Ser Arg Ile Ala Asp Gly Leu Ala Phe Phe Ile Ala Pro Pro Asp
94           85           90           95
96 Ser Val Ile Ser Tyr His Gly Gly Phe Leu Gly Leu Phe Pro Asn Ala
97           100          105          110
99 Asn Thr Leu Asn Asn Ser Ser Thr Ser Glu Asn Gln Thr Thr Thr Lys
100          115          120          125
102 Ala Ala Ser Ser Asn Val Val Ala Val Glu Phe Asp Thr Tyr Leu Asn
103          130          135          140
105 Pro Asp Tyr Gly Asp Pro Asn Tyr Ile His Ile Gly Ile Asp Val Asn
106 145          150          155          160
108 Ser Ile Arg Ser Lys Val Thr Ala Lys Trp Asp Trp Gln Asn Gly Lys
109          165          170          175
111 Ile Ala Thr Ala His Ile Ser Tyr Asn Ser Val Ser Lys Arg Leu Ser
112          180          185          190
114 Val Thr Ser Tyr Tyr Ala Gly Ser Lys Pro Ala Thr Leu Ser Tyr Asp
115          195          200          205
117 Ile Glu Leu His Thr Val Leu Pro Glu Trp Val Arg Val Gly Leu Ser
118          210          215          220
120 Ala Ser Thr Gly Gln Asp Lys Glu Arg Asn Thr Val His Ser Trp Ser
121 225          230          235          240
123 Phe Thr Ser Ser Leu Trp Thr Asn Val Ala Lys Lys Glu Asn Glu Asn
124          245          250          255
126 Lys Tyr Ile Thr Arg Gly Val Leu
127          260

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130 &lt;210&gt; SEQ ID NO: 3

131 &lt;211&gt; LENGTH: 1005

132 &lt;212&gt; TYPE: DNA

133 &lt;213&gt; ORGANISM: Artificial Sequence

135 &lt;220&gt; FEATURE:

136 &lt;223&gt; OTHER INFORMATION: Nucleic acid sequence of the naturally-occurring D1-FRIL protein.

139 &lt;400&gt; SEQUENCE: 3

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140 atggtcttctt ccaacttact caccctagcc ctcttctcttg tgcttctcac ccacgcaaac      60
142 tcagccgcac agtcattgtc atttagtttc accaagtgtg atcctaacca agaggatctt      120
144 atcttccaag gtcattgccac ttctacaaac aatgtcttac aagtcaccaa gttagacagt      180
146 gcaggaaacc ctgtgagttc tagtgcgggg agagtgttat attctgcacc attgcgcctt      240
148 tgggaagact ctgcggtatt gacaagcttt gacaccatta tcaactttga aatctcaaca      300
150 ccttacactt ctggtatagc tgatggcttg gccttcttca ttgcaccacc tgactctgtc      360
152 atcagttatc atggtggttt tcttggtact tttcccaacg caaacactct caacaactct      420
154 tccacctctg aaaaccaaac caccactaag gctgcatcaa gcaacgttgt tgctgttgaa      480
156 tttgacacct atcttaatcc cgattatggt gatccaaact acatacacat cggaattgac      540

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158 gtcaactcta ttagatccaa ggtaactgct aagtgggact ggcaaaatgg gaaaatagcc      600
160 actgcacaca ttagctataa ctctgtctct aaaagactat ctgttactag ttattatgct      660
162 gggagtaaac ctgcgactct ctctatgat attgagttac atacagtgct tcctgaatgg      720
164 gtcagagtag ggttatctgc ttcaactgga caagataaag aaagaaatac cgttcactca      780
166 tggctcttca cttcaagctt gtggaccaat gtggcgaaga aggagaatga aaacaagtat      840
168 attacaagag gcgttctgtg atgatatatg tgtatcaatg attttctatg ttataagcat      900
170 gtaatgtgcy atgagtcaat aatcacaagt acagtgtagt acttgtatgt tgtttgtgta      960
172 agagtcaagt tgcttttaaat aataacaagt gcagttagta cttgt                      1005
175 <210> SEQ ID NO: 4
176 <211> LENGTH: 22
177 <212> TYPE: PRT
178 <213> ORGANISM: Artificial Sequence
180 <220> FEATURE:
181 <223> OTHER INFORMATION: Signal sequence from the FRIL family isolated from
182     Dolichos lab lab
185 <400> SEQUENCE: 4
187 Met Ala Ser Ser Asn Leu Leu Thr Leu Ala Leu Phe Leu Val Leu Leu
188 1             5             10             15
190 Thr His Ala Asn Ser Ala
191             20
194 <210> SEQ ID NO: 5
195 <211> LENGTH: 914
196 <212> TYPE: DNA
197 <213> ORGANISM: Artificial Sequence
199 <220> FEATURE:
200 <223> OTHER INFORMATION: Pv-FRIL.
203 <400> SEQUENCE: 5
204 gctcagtcac tatcttttaa ctttaccaag tttgatcttg accaaaaaga tcttatcttc      60
206 caagggtgat ccacttctac aaacaatgtc ttacaactca ctaagttaga cagtggagga      120
208 aaccctgtgg gtgctagtgt gggaagagtg ttattctctg caccatttca tctttgggaa      180
210 aactctatgg cagtgtcaag ctttgaaact aatctcacca ttcaaattctc aacacctcac      240
212 ccttattatg cagctgatgg ctttgccttc ttcttgcac cacatgacac tgtcatccct      300
214 ccaaattctt ggggcaaatt ccttggaact tactcaaacg ttttcagaaa ctccccacc      360
216 tctgaaaacc aaagctttgg tgatgtcaat actgactcaa gagttgttgc tgtcgaattt      420
218 gacaccttcc ctaatgccaa tattgatcca aattacagac acattggaat cgatgtgaac      480
220 tctattaagt ccaaggaaac tgctaggtgg gagtggcaaa atgggaaaac ggccactgca      540
222 cgcacagctc ataactctgc ctctaaaaaa tcaactgtta ctacgtttta tcctgggatg      600
224 gaagttgtgg ctctctccca tgatgttgac ttacatgcag agcttctctga atgggttaga      660
226 gtagggttat ctgcttcaac tggagaggag aaacaaaaaa ataccattat ctcatggtct      720
228 ttcacttcaa gcttgaagaa caacgaggtg aaggagccga aagaagacat gtatattgca      780
230 aacgttgtgc gatcatatac atggatcaat gacgttctat cttatataag caataaataa      840
232 atgtatgatg cactcaataa taatcacaag tacgtacggt gtagtacttg tatgttgttt      900
234 atgaaaaaaa aaaa                      914
238 <210> SEQ ID NO: 6
239 <211> LENGTH: 303
240 <212> TYPE: PRT
241 <213> ORGANISM: Artificial Sequence
243 <220> FEATURE:
244 <223> OTHER INFORMATION: Pv-FRIL.

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## RAW SEQUENCE LISTING

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Input Set : A:\108236-119.ST25.txt

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247 &lt;400&gt; SEQUENCE: 6

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249 Ala Gln Ser Leu Ser Phe Asn Phe Thr Lys Phe Asp Leu Asp Gln Lys
250 1          5          10          15
252 Asp Leu Ile Phe Gln Gly Asp Ala Thr Ser Thr Asn Asn Val Leu Gln
253          20          25          30
255 Leu Thr Lys Leu Asp Ser Gly Gly Asn Pro Val Gly Ala Ser Val Gly
256          35          40          45
258 Arg Val Leu Phe Ser Ala Pro Phe His Leu Trp Glu Asn Ser Met Ala
259          50          55          60
261 Val Ser Ser Phe Glu Thr Asn Leu Thr Ile Gln Ile Ser Thr Pro His
262 65          70          75          80
264 Pro Tyr Tyr Ala Ala Asp Gly Phe Ala Phe Phe Leu Ala Pro His Asp
265          85          90          95
267 Thr Val Ile Pro Pro Asn Ser Trp Gly Lys Phe Leu Gly Leu Tyr Ser
268          100         105         110
270 Asn Val Phe Arg Asn Ser Pro Thr Ser Glu Asn Gln Ser Phe Gly Asp
271          115         120         125
273 Val Asn Thr Asp Ser Arg Val Val Ala Val Glu Phe Asp Thr Phe Pro
274          130         135         140
276 Asn Ala Asn Ile Asp Pro Asn Tyr Arg His Ile Gly Ile Asp Val Asn
277 145         150         155         160
279 Ser Ile Lys Ser Lys Glu Thr Ala Arg Trp Glu Trp Gln Asn Gly Lys
280          165         170         175
282 Thr Ala Thr Ala Arg Ile Ser Tyr Asn Ser Ala Ser Lys Lys Ser Thr
283          180         185         190
285 Val Thr Thr Phe Tyr Pro Gly Met Glu Val Val Ala Leu Ser His Asp
286          195         200         205
288 Val Asp Leu His Ala Glu Leu Pro Glu Trp Val Arg Val Gly Leu Ser
289          210         215         220
291 Ala Ser Thr Gly Glu Glu Lys Gln Lys Asn Thr Ile Ile Ser Trp Ser
292 225         230         235         240
294 Phe Thr Ser Ser Leu Lys Asn Asn Glu Val Lys Glu Pro Lys Glu Asp
295          245         250         255
297 Met Tyr Ile Ala Asn Val Val Arg Ser Tyr Thr Trp Ile Asn Asp Val
298          260         265         270
300 Leu Ser Tyr Ile Ser Asn Lys Met Tyr Asp Ala Leu Asn Asn Asn His
301          275         280         285
303 Lys Tyr Val Arg Cys Ser Thr Cys Met Leu Phe Met Lys Lys Lys
304          290         295         300

```

307 &lt;210&gt; SEQ ID NO: 7

308 &lt;211&gt; LENGTH: 678

309 &lt;212&gt; TYPE: DNA

310 &lt;213&gt; ORGANISM: Artificial Sequence

312 &lt;220&gt; FEATURE:

313 &lt;223&gt; OTHER INFORMATION: YamFril partial mRNA sequence.

316 &lt;400&gt; SEQUENCE: 7

```

317 acgaagttcg acagcgacca aaaggatctt atgttccaag gtcataccat ttctagcagc    60
319 aatgtcatat aactcaccaa gttagacagt aatggaaacc ctgtgagtac cagtgtggga    120
321 agagtgttat actctgcacc attgcgcctt tgggaaagct ctacagtagt gtcaaccttt    180

```

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323 gagaccactt tcacctttca aatctcaaca cttacacta gtcctcctgg tgatgggctc 240
325 gccttcttcc ttgcaccata tgacactgtc atccctccaa attctgctgg caatcttctt 300
327 ggactctttc ctaacttaaa tgctttaaga aactccacca ccagtaaaga aaccactatt 360
329 gatgtcaatg ctgcatctaa caacgttggt gccgttgaat ttgacaccta ccctaacgac 420
331 aatattgggtg atccaagata caaacacatt ggaatcgatg tcaactctat caggtccaag 480
333 gcaactggtg cgtgggactg gcaaaatggg aaaacagcca ctgcacacat cagctataac 540
335 tctgcctcta aaagactatc tgttactact ttttatcctg ggggtaaagc tgtgagtctt 600
337 tcccatgacg ttgagctcac tcaagtgtt cctcaatgga ttagagtagg gttctctgct 660
339 tcaacaggat tagagaaa 678
343 <210> SEQ ID NO: 8
344 <211> LENGTH: 234
345 <212> TYPE: PRT
346 <213> ORGANISM: Artificial Sequence
348 <220> FEATURE:
349 <223> OTHER INFORMATION: YamFril deduced amino acid sequence.
352 <400> SEQUENCE: 8
354 Ala Gln Ser Val Ser Phe Thr Phe Thr Lys Phe Asp Ser Asp Gln Lys
355 1 5 10 15
357 Asp Leu Met Phe Gln Gly His Thr Ile Ser Ser Ser Asn Val Ile Gln
358 20 25 30
360 Leu Thr Lys Leu Asp Ser Asn Gly Asn Pro Val Ser Thr Ser Val Gly
361 35 40 45
363 Arg Val Leu Tyr Ser Ala Pro Leu Arg Leu Trp Glu Ser Ser Thr Val
364 50 55 60
366 Val Ser Thr Phe Glu Thr Thr Phe Thr Phe Gln Ile Ser Thr Pro Tyr
367 65 70 75 80
369 Thr Ser Pro Pro Gly Asp Gly Leu Ala Phe Phe Leu Ala Pro Tyr Asp
370 85 90 95
372 Thr Val Ile Pro Pro Asn Ser Ala Gly Asn Leu Leu Gly Leu Phe Pro
373 100 105 110
375 Asn Leu Asn Ala Leu Arg Asn Ser Thr Thr Ser Lys Glu Thr Thr Ile
376 115 120 125
378 Asp Val Asn Ala Ala Ser Asn Asn Val Val Ala Val Glu Phe Asp Thr
379 130 135 140
381 Tyr Pro Asn Asp Asn Ile Gly Asp Pro Tyr Arg Lys His Ile Gly Ile
382 145 150 155 160
384 Asp Val Asn Ser Ile Arg Ser Lys Ala Thr Val Ala Trp Asp Trp Gln
385 165 170 175
387 Asn Gly Lys Thr Ala Thr Ala His Ile Ser Tyr Asn Ser Ala Ser Lys
388 180 185 190
390 Arg Leu Ser Val Thr Thr Phe Tyr Pro Gly Gly Lys Ala Val Ser Leu
391 195 200 205
393 Ser His Asp Val Glu Leu Thr Gln Val Leu Pro Gln Trp Ile Arg Val
394 210 215 220
396 Gly Phe Ser Ala Ser Thr Gly Leu Glu Lys
397 225 230
400 <210> SEQ ID NO: 9
401 <211> LENGTH: 15
402 <212> TYPE: PRT

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RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/09/476,485A

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Input Set : A:\108236-119.ST25.txt  
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Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:10; Xaa Pos. 14  
Seq#:11; N Pos. 3,6,9,12,15,18,21  
Seq#:12; N Pos. 3,6,9,15  
Seq#:16; N Pos. 3,6,9,12,15  
Seq#:24; Xaa Pos. 7  
Seq#:31; Xaa Pos. 7  
Seq#:32; Xaa Pos. 7  
Seq#:33; Xaa Pos. 12  
Seq#:34; Xaa Pos. 7  
Seq#:36; N Pos. 18

## VERIFICATION SUMMARY

PATENT APPLICATION: US/09/476,485A

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Input Set : A:\108236-119.ST25.txt

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L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:433 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:0  
L:462 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:0  
L:491 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12 after pos.:0  
L:556 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16 after pos.:0  
L:762 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24 after pos.:0  
L:865 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:0  
L:885 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32 after pos.:0  
L:905 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33 after pos.:0  
L:925 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34 after pos.:0  
L:959 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:0  
L:1121 M:283 W: Missing Blank Line separator, <220> field identifier